

CLAIMS

What is claimed is:

- 1 1. A method for rendering arbitrary content for display on a particular viewing  
2 device, comprising:
  - 3 (a) receiving content;
  - 4 (b) assembling the content into an object-oriented structure in a centralized format;
  - 5 (c) translating the content in the centralized format to a markup language document  
6 compatible with a display environment of a viewing device;
  - 7 (d) formatting the markup language document for display on the viewing device  
8 utilizing a descriptor, wherein the descriptor defines parameters of the display  
9 environment; and
  - 10 (e) outputting the formatted markup language document to the viewing device.
- 1 2. The method as recited in claim 1, wherein the object-oriented structure is a tree-  
2 type structure.
- 1 3. The method as recited in claim 1, wherein the content is assembled into the  
2 object-oriented structure node by node.
- 1 4. The method as recited in claim 1, wherein content that is assembled into a string  
2 is parsed for translating the content into the centralized format, wherein the  
3 translated content is assembled into the object-oriented structure.
- 1 5. The method as recited in claim 1, further comprising receiving content written in  
2 the markup language, and outputting the content written in the markup language  
3 to the viewing device.

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- 1 6. The method as recited in claim 1, wherein the centralized format is an XML  
2 format.
- 1 7. The method as recited in claim 1, further comprising translating the content to a  
2 desired language.
- 1 8. The method as recited in claim 1, further comprising translating the content to a  
2 desired character set.
- 1 9. The method as recited in claim 1, wherein the formatting of the markup  
2 language document for display on the viewing device is based at least in part on  
3 a display screen size of the viewing device.
- 1 10. The method as recited in claim 9, wherein the formatting of the markup  
2 language document for display on the viewing device includes parsing a table  
3 into a format that is viewable on a display of the viewing device.
- 1 11. The method as recited in claim 1, wherein the formatting of the markup  
2 language document for display on the viewing device includes splitting the  
3 markup language document into multiple pages for display on the viewing  
4 device.
- 1 12. The method as recited in claim 1, wherein the formatting of the markup  
2 language document for display on the viewing device includes inserting content  
3 in a template.
- 1 13. The method as recited in claim 1, wherein the display device is a wireless  
2 device.

- 1 14. A computer program product for rendering arbitrary content for display on a  
2 particular viewing device, comprising:  
3 (a) computer code for receiving content;  
4 (b) computer code for assembling the content into an object-oriented structure in a  
5 centralized format;  
6 (c) computer code for translating the content in the centralized format to a markup  
7 language document compatible with a display environment of a viewing device;  
8 (d) computer code for formatting the markup language document for display on the  
9 viewing device utilizing a descriptor, wherein the descriptor defines parameters  
10 of the display environment; and  
11 (e) computer code for outputting the formatted markup language document to the  
12 viewing device.

- 1 15. A system for rendering arbitrary content for display on a particular viewing  
2 device, comprising:  
3 (a) logic for receiving content;  
4 (b) logic for assembling the content into an object-oriented structure in a centralized  
5 format;  
6 (c) logic for translating the content in the centralized format to a markup language  
7 document compatible with a display environment of a viewing device;  
8 (d) logic for formatting the markup language document for display on the viewing  
9 device utilizing a descriptor, wherein the descriptor defines parameters of the  
10 display environment; and  
11 (e) logic for outputting the formatted markup language document to the viewing  
12 device.

- 1 16. A method for rendering arbitrary content for display on a particular viewing  
2 device, comprising:  
3 (a) receiving content;

- 4 (b) assembling the content into a Document Object Model (DOM) tree in a  
5 centralized format;
- 6 (c) translating the content in the DOM tree to a markup language document  
7 compatible with a display environment of a viewing device;
- 8 (d) formatting the markup language document for display on the viewing device;
- 9 (e) splitting the markup language document into multiple pages for display on the  
10 viewing device; and
- 11 (f) outputting the formatted markup language document to the viewing device.

1 17. The method as recited in claim 16, wherein the content is assembled into the  
2 DOM tree node by node.

1 18. The method as recited in claim 16, wherein content that is assembled into a  
2 string is parsed for translating the content into the centralized format, wherein  
3 the translated content is assembled into the DOM tree.

1 19. The method as recited in claim 16, further comprising receiving content written  
2 in the markup language, and outputting the content written in the markup  
3 language to the viewing device.

1 20. The method as recited in claim 16, wherein the centralized format is an XML  
2 format.

1 21. The method as recited in claim 16, wherein a descriptor defines parameters of  
2 the display environment, wherein the markup language document is formatted  
3 for display on the viewing device utilizing the descriptor.

1 22. The method as recited in claim 16, further comprising translating the content to  
2 a desired language.

- 1 23. The method as recited in claim 16, further comprising translating the content to  
2 a desired character set.
- 1 24. The method as recited in claim 16, wherein the splitting of the markup language  
2 document is based at least in part on a display screen size of the viewing device.
- 1 25. The method as recited in claim 16, wherein splitting of the markup language  
2 document is based at least in part on a memory of the viewing device.
- 1 26. The method as recited in claim 16, wherein the formatting of the markup  
2 language document for display on the viewing device includes parsing a table  
3 into a format that is viewable on a display of the viewing device.
- 1 27. The method as recited in claim 16, wherein the formatting of the markup  
2 language document for display on the viewing device includes inserting content  
3 in a template.
- 1 28. The method as recited in claim 16, wherein the display device is a wireless  
2 device.
- 1 29. A computer program product for rendering arbitrary content for display on a  
2 particular viewing device, comprising:  
3 (a) computer code for receiving content;  
4 (b) computer code for assembling the content into a Document Object Model  
5 (DOM) tree in a centralized format;  
6 (c) computer code for translating the content in the DOM tree to a markup language  
7 document compatible with a display environment of a viewing device;  
8 (d) computer code for formatting the markup language document for display on the  
9 viewing device;

- 10 (e) computer code for splitting the markup language document into multiple pages  
11 for display on the viewing device; and  
12 (f) computer code for outputting the formatted markup language document to the  
13 viewing device.

- 1 30. A system for rendering arbitrary content for display on a particular viewing  
2 device, comprising:  
3 (a) logic for receiving content;  
4 (b) logic for assembling the content into a Document Object Model (DOM) tree in a  
5 centralized format;  
6 (c) logic for translating the content in the DOM tree to a markup language  
7 document compatible with a display environment of a viewing device;  
8 (d) logic for formatting the markup language document for display on the viewing  
9 device;  
10 (e) logic for splitting the markup language document into multiple pages for display  
11 on the viewing device; and  
12 (f) logic for outputting the formatted markup language document to the viewing  
13 device.

- 1 31. A method for dividing content into multiple pages for display on a particular  
2 viewing device, comprising:  
3 (a) receiving content;  
4 (b) translating the content to a markup language document compatible with a  
5 display environment of a viewing device;  
6 (c) splitting the markup language document into multiple items;  
7 (d) parsing the multiple items on multiple pages;  
8 (e) outputting one page of the set of pages to the viewing device, wherein the one  
9 page has a pointer to at least one of the other pages.

- 1 32. The method as recited in claim 31, wherein each item is placed on a separate  
2 page.
- 1 33. The method as recited in claim 31, wherein each of the pages includes a header.
- 1 34. The method as recited in claim 31, wherein an item is split across multiple pages  
2 if the item is too large for a memory of the viewing device.
- 1 35. The method as recited in claim 34, wherein a tag of the item is not split.
- 1 36. The method as recited in claim 34, wherein a split is made within contents of a  
2 tag, wherein the tag is placed on each of the multiple pages.
- 1 37. The method as recited in claim 31, wherein an item is split across multiple pages  
2 if the item is too large for a display screen size of the viewing device.
- 1 38. The method as recited in claim 37, wherein a tag of the item is not split.
- 1 39. The method as recited in claim 37, wherein a split is made within contents of a  
2 tag, wherein the tag is placed on each of the multiple pages.
- 1 40. The method as recited in claim 31, wherein words are not split.
- 1 41. The method as recited in claim 31, wherein selected portions of the content are  
2 used to organize the pages.
- 1 42. The method as recited in claim 31, wherein pages not being output to the  
2 viewing device are stored in a cache.

1 43. The method as recited in claim 42, wherein the cached pages are deleted upon  
2 closing of a session.

1 44. A computer program product for dividing content into multiple pages for display  
2 on a particular viewing device, comprising:

- 3 (a) computer code for receiving content;  
4 (b) computer code for translating the content to a markup language document  
5 compatible with a display environment of a viewing device;  
6 (c) computer code for splitting the markup language document into multiple items;  
7 (d) computer code for parsing the multiple items on multiple pages;  
8 (e) computer code for outputting one page of the set of pages to the viewing device,  
9 wherein the one page has a pointer to at least one of the other pages.

1 45. A system for dividing content into multiple pages for display on a particular  
2 viewing device, comprising:

- 3 (a) logic for receiving content;  
4 (b) logic for translating the content to a markup language document compatible with  
5 a display environment of a viewing device;  
6 (c) logic for splitting the markup language document into multiple items;  
7 (d) logic for parsing the multiple items on multiple pages;  
8 (e) logic for outputting one page of the set of pages to the viewing device, wherein  
9 the one page has a pointer to at least one of the other pages.

1 46. A method for rendering arbitrary content for display on a particular viewing  
2 device, comprising:

- 3 (a) receiving content;  
4 (b) assembling the content into an object-oriented structure in a centralized format;  
5 (c) translating the content in the centralized format to a markup language document  
6 compatible with a display environment of a viewing device;



- (d) parsing a table into a format that is viewable on a display of the viewing device;
- (e) splitting the markup language document into multiple pages for display on the viewing device;
- (f) performing further formatting of the markup language document for display on the viewing device; and
- (g) outputting the formatted markup language document to the viewing device.

47. A method for rendering arbitrary content for display on a particular wireless viewing device, comprising:
- (a) receiving content;
  - (b) assembling the content into a Document Object Model (DOM) tree in a centralized format node by node, wherein content that is assembled into a string is parsed for translating the content into the centralized format;
  - (c) translating the content to a desired language;
  - (d) translating the content to a desired character set;
  - (e) translating the content in the DOM tree to a markup language document compatible with a display environment of a wireless viewing device;
  - (f) parsing a table into a format that is viewable on a display of the viewing device;
  - (g) splitting the markup language document into multiple pages for display on the viewing device;
  - (h) performing further formatting of the markup language document for display on the viewing device, wherein the descriptor defines parameters of the display environment;
  - (i) splitting the markup language document into multiple pages for display on the wireless viewing device, wherein the splitting of the markup language document is based at least in part on a display screen size of the viewing device and at least in part on a memory of the viewing device; and
  - (j) outputting the formatted markup language document to the wireless viewing device.

- 1 48. A method for dividing content into multiple pages for display on a particular  
2 viewing device, comprising:
- 3 (a) receiving content;
- 4 (b) translating the content to a markup language document compatible with a  
5 display environment of a viewing device;
- 6 (c) splitting the markup language document into multiple items;
- 7 (d) parsing the multiple items on multiple pages;
- 8 (e) splitting an item across multiple pages if the item is too large for a memory of  
9 the viewing device;
- 10 (f) splitting an item across multiple pages if the item is too large for a display  
11 screen size of the viewing device;
- 12 (g) making a split within contents of a tag, wherein the tag is placed on each of the  
13 multiple pages, wherein the tag itself is not split;
- 14 (h) using selected portions of the content to organize the pages;
- 15 (i) outputting one page of the set of pages to the viewing device, wherein the one  
16 page has a pointer to at least one of the other pages;
- 17 (j) storing pages not being output to the viewing device in a cache; and  
18 (k) deleting the cached pages upon closing of a session.